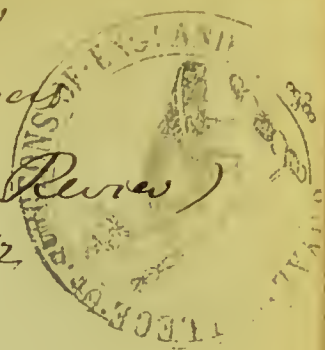


Nicolson (David) Statistician
of Mortality among Prisoners
(From the Brit. & For. Med.-Chi Review)
July 1872



STATISTICS OF MORTALITY AMONG PRISONERS:

BEING AN
INQUIRY INTO THE DEATH-RATE OF THE GOVERNMENT PRISONS
OF ENGLAND, ITS CAUSES, AND THE CIRCUMSTANCES
AFFECTING IT;

WITH
PATHOLOGICAL OBSERVATIONS.

THE question of mortality in convict prisons cannot be settled by an appeal to mere figures. I propose, therefore, to consider the subject under the following heads:

I. Brief outline; classifying the prisons and glancing at the *régime* implied in 'penal servitude.'

II. Classes from which the prison ranks are recruited:

1. The social status of recruits.
2. Their physical and mental condition.

III. General statistics of convict population and mortality.

IV. Statistics and pathological remarks on the various causes of death among prisoners.

V. Has the mortality of convict prisons increased or decreased?

VI. Concluding remarks.

I. Brief outline of prisons and 'penal servitude.'

The Government prisons of England are eleven in number, and all are situated either in London or in the southern counties. The metropolitan ones are Pentonville, Millbank, Brixton, and Fulham.

The following table gives particulars:

TABLE I.—*Showing the distribution and nature of convict prisons of England, with the average population, for 1870.*

Nature of Prison.		Name.	Situation.	Average popula- tion for 1870.	
Male Prisons	Separate or recep- tion prisons	Pentonville	London	687	
		Millbank	Ditto	362	
	Public works	Portland	Dorset	1568	
		Chatham	Kent	1586	
		Portsmouth	Hants	1218	
	Light labour and invalid prisons	Brixton	London	486	
		Parkhurst	Isle of Wight	468	
		Dartmoor	Devon	881	
		Woking	Surrey	684	
		Millbank	London	350	
Female prisons		Woking	Surrey	706	
		Fulham	London	134	

Millbank alone contains prisoners of both sexes. The prisons at Woking are distinct establishments, the one being the general prison for females, and the other being for the most invalid class of males. Broadmoor is the asylum for insane criminals, but it is under a different board of directors.

A prisoner on being sentenced to penal servitude is removed from the county or borough gaol to one of the reception prisons for convicts in London, where he undergoes what is termed his 'separate' confinement, extending over about nine months. He is then transferred to public works, where, under ordinary circumstances, he finishes his sentence. If, at the end of his separate confinement, or during any portion of his imprisonment, he is found to be unfit for the full discipline and labour of penal servitude, he is drafted off to some prison set apart for invalids or for the light-labour class of men. Thus, in a general way, the circumstances of the prisoner, *quoad* location, discipline, and labour, are made to depend upon his physical (and, when necessary, his mental) condition. The employment at public works consists, for the most part, of good steady labouring work—quarrying, excavating, building, brickmaking, &c. All this involves a good deal of artisan work, and at this the prisoners are employed as well, some being smiths, carpenters, masons, moulders, &c., and others painters, shoemakers, and the like. The lighter forms of employment comprise mostly agricultural work, tailoring, and oakum picking, with a hundred jobs of an incidental nature.

In the days of transportation the able-bodied only were selected and sent across the seas.

II. Classes from which prisoners are recruited.

1. The social status of recruits.
2. Their physical and mental condition.

1. All grades of society, from the Member of 'the House' down to the wretched beggar in the streets, are found here 'doing their terms.' The mass of prisoners undoubtedly belong to the lower strata of individuals who style themselves variously 'labourers,' 'hawkers,' and 'of no occupation,' men who never slip a chance of turning a *dishonest* penny, and who seem simply to live and trade in crime. Above these, in considerable numbers, comes the perhaps 'hitherto honest' man, artisan, or tradesman, who becomes malicious, or who, with a 'drop o' drink' in him, or in a fit of passion, deals an unfortunate and fatal blow at his wife or his fellow, or who, in the hour of temptation, gives way and steals his master's goods. Higher up still are to be distinguished the more limited number of the 'eminently respectable' class, who wear black coats, clean fronts, and go to church regularly; 'men of business' these—needy clerks and peccant city men, with a sprinkling of the learned and professional—who are caught 'borrowing' money on highly irregular principles, or whose peculiarity consists in an unfortunate facility with the pen and a weakness for signing other people's names with it.

No matter to which of these grades the individuals belong, they are all put on the same footing in the system of penal servitude for which crime is the qualification.

2. Physical and mental state. This is a subject which it will be necessary for us constantly to bear in mind, and we must, therefore, obtain some clear notion upon it before starting. I believe that, as a class, prisoners are essentially *ill-conditioned*. Taking first the lower sections of the criminal class, they will be found to include men naturally of a low grade of intellectual and moral development, as indicated by their habits; and where the mental constitution is defective, it is no uncommon thing to find, side by side with it, some defects in the *physique*. Others, again, have the bodily constitution naturally weak, or they are the subjects of some positive hereditary taint. But besides this the mode of life of these people, and the circumstances attached to it, cannot fail to leave their impressions upon them in some form of disease or infirmity. From many of the invalid class we have their own confession that they have led what they call 'hard lives,' and that they have 'knoeked about a deal in their time.' A 'hard life' and 'knoocking about' are comprehensive terms, which represent, in the aggregate a terrible history of drunkenness, debauchery, exposure, and irregularity, necessarily entailing great deterioration of the constitutional powers. On the other hand, the minds of criminals of the more

respectable order have been strained to the utmost in the ups and downs of speculation. The nervous system, unequal to the task imposed upon it, has become unhinged by worry and anxiety, to the neglect of the healthful wants of the body; gastric derangement is the consequence, and the heart or the brain becomes seriously involved. From all this it will certainly be no matter of surprise if we find that large numbers of our prisoners are *ill-conditioned*, either in body or mind. And what do figures tell us? In their Report for the year 1868 the directors of convict prisons state that, "by returns made in April, 1869, it appears that, of 5458 convicts who have passed the period when they were eligible for removal to public works, 1762 were invalids, or incapable to such an extent as to be fit only for light labour, and 162 were permanent invalids hardly capable of any labour at all; *i.e.* 5 out of every 14 prisoners (1 in 2·8) were invalids or fit only for light labour.

On the same authority (report for 1869) we find that as many as 370 males (almost the half) out of 784 received into Millbank were of weak and enfeebled constitutions on reception.

And Mr. Gover, the medical officer of Millbank, in his report for 1868, makes the following statement, which I give in full:—"The great majority of the prisoners who were removed to Dartmoor and Woking as invalids were suffering on reception from the diseases or infirmities marked as the cause of removal. Many of them improved very considerably in the interval between their reception and removal; and I may here observe, with reference to the population of the prison as a whole, that the general tendency to improvement, which has previously been a subject of remark, has been as manifest during the year just ended as in former years. Nevertheless, taking the population of this prison, exclusive of the imbeciles and epileptics, as affording a fair standard of comparison, I have reason to believe that the proportion of convicts afflicted with mental and bodily diseases is greater than would be found in any other section of the community."

And in his report for the same year Mr. Blaker, the medical officer of the Public Works Prison at Portland, says: "There can hardly be a doubt that the number of weakly and diseased prisoners is largely on the increase, and experience and observation lead me to think that the vast majority of these convicts entered prison suffering from latent or actual disease."

It is plain, then, that a large proportion (probably over one third) of criminals *bring with them* into prison impaired constitutions. This impairment or defect manifests itself, first, in the form of positive disease or infirmity; secondly, in a predisposition to certain forms of disease, mostly of a constitutional or phthisical nature; and, thirdly, in a want of ability to resist the destructive

influences of certain other diseases which are more active and local in their character.

III. General Statistics. — These are based upon the annual reports of the Directors of Convict Prisons, and embrace a period of fifteen years, beginning with 1856 and ending with 1870, the year last reported upon. The minor details of prison life, as bearing upon our present subject, have been during those years tolerably uniform; certain influential alterations in circumstances will be considered further on. The average annual population for the fifteen years, taking both sexes, was 7551; the males averaging 6419 and the females 1132.

Among the males the annual population ranged from 5862 to 7942. The numbers fluctuated more or less by a hundred or two from year to year until 1866, since which there has been a steady rise up to the maximum in 1870. This increase, I may state, is due, not to the number of convictions, but to the accumulation of convicts at home consequent upon the gradual cessation of transportation.

Among the females the numbers have varied a good deal. There was a pretty steady increase from the minimum, 810 in 1856, to the maximum, 1303 in 1863; subsequently the number fell considerably, but the returns for the last three years show a tendency towards an increase.

The proportion of females to males has been in the ratio of 1 to 5·67 for the whole period, or 3 females to 17 males. The cessation of transportation has, of course, caused an increase in the proportion of men latterly.

As to mortality, we find that during the fifteen years there were 1528 deaths (101 annually), of which 1289 took place among the males and 239 among the females. The average annual number of deaths per 1000 was 13·49; males 13·38, females 14·07; the range among the former being from 9·47 to 18·38, and among the latter from 6·60 to 21·19. The ratio of mortality among females, as compared to males, was as 1 to 5·36; or 3 females to 16 males.

TABLE 11.—*Showing annual population, male and female, of convict prisons, with the mortality and its rate per 1000, for 15 years, ending with 1870.*

YEAR.	POPULATION. ¹			DEATHS.			DEATHS PER 1000. ²		DEATHS PER 1000. M. AND F.	
	M.	F.	Total.	M.	F.	Total.	M.	F.	All causes.	Phthisis.
1856	6025	810	6835	91	15	106	15·10	18·51	15·5	7·3
1857	6650	922	7572	63	14	77	9·47	15·18	10·1	4·6
1858	6760	1043	7803	104	18	122	15·38	17·25	15·6	7·8
1859	6551	1189	7740	69	11	80	10·53	9·25	10·3	4·0
1860	6397	1269	7666	79	19	98	12·34	14·97	12·7	4·3
1861	6022	1205	7227	68	11	79	11·29	9·12	10·9	3·8
1862	5862	1211	7073	54	8	62	9·21	6·60	8·7	2·8
1863	6089	1303	7392	91	21	112	14·94	16·11	15·1	7·0
1864	6153	1274	7427	89	27	116	14·46	21·19	15·6	7·0
1865	5983	1248	7231	110	15	125	18·38	12·01	17·4	8·1
1866	5941	1017	6958	103	18	121	17·33	17·69	17·3	7·0
1867	6094	1008	7102	90	12	102	14·76	11·90	14·3	4·6
1868	6593	1104	7697	79	12	91	11·98	10·86	11·8	3·5
1869	7219	1185	8404	99	15	114	13·71	12·66	13·5	5·9
1870	7942	1190	9132	100	23	123	12·59	19·32	13·4	5·5
Aver. for 15 yrs. }	6419	1132	7551	85·2	15·2	101	13·38	14·07	13·4	5·5

The average time to be passed in prison (deducting the proportionate remission) was, reckoned upon the sentences of the convicts in prison in December, 31st, 1868, for men five and a half years, for women five years. But probably this time will increase, for two reasons: first, owing to the greater length of sentences awarded, and, secondly, owing to a new regulation, by which the time remitted on a previous conviction is forfeited in the event of reconviction.

IV. Causes of Death; Statistics and Pathological Remarks. —We are now in a position to consider the classes or orders of disease to which this mortality is due; but I may first state that the striking features in the *post-mortem* examination of prisoners consist in the number of organs and tissues involved in the morbid processes, and in the extent to which particular organs have been destroyed. The extensive nature of the morbid appearances revealed after death among prisoners is explained, so far at least, by their originally unhealthy constitution, by their high rate of death from consumption, and by the frequency with which long-protracted fatal diseases in them tend to run into consumption.

¹ The sum of the daily average population of the various prisons.

² The deaths per 1000 are in all cases calculated upon the average population.

We shall take the causes of death in the following order:—

1. Diseases of brain and nervous system.
2. Diseases of respiratory system.
3. Diseases of circulatory system.
4. Diseases of digestive system.
5. Diseases of urinary system.
6. Constitutional and general diseases.
7. Accidents and violence.

Table III is constructed to show the actual and relative amount of mortality arising from the various causes during the fifteen years. They are mostly local; but a number are included under the term “constitutional and general,” which are not referable to any particular system of the body. The column “zymotic diseases” is placed under merely for comparison, and does not form part of the Table itself, which already includes them.

TABLE III.—*Showing the distribution of mortality among the various causes of death, during 15 years, ending with 1870.*

DISEASES.	DEATHS IN 15 YEARS.			AVERAGE ANNUAL MORTALITY PER 1000 PRISONERS.			PER-CENTAGE OF DEATHS UPON WHOLE MORTALITY.		
	M.	F.	Total.	M.	F.	Both sexes.	M.	F.	Both sexes.
Brain and nervous system	113	26	139	1·17	1·53	1·22	8·76	10·87	9·09
Respi- { Phthisis	527	104	631	5·47	6·12	5·57	40·88	43·51	41·29
ratory { Other	155	18	173	1·60	1·06	1·52	12·02	7·53	11·32
system { diseases	107	23	130	1·11	1·35	1·14	8·30	9·62	8·50
Circulatory system	108	25	133	1·12	1·47	1·17	8·37	10·46	8·70
Digestive ditto .	45	10	55	·47	·58	·48	3·49	4·18	3·59
Urinary ditto .	161	32	193	1·67	1·88	1·70	12·41	13·38	12·59
Constitutional and general	73	1	74	·75	0·05	·65	5·74	0·41	4·90
Accidents and violence									
Totals . .	1289	239	1528	13·38	14·07	13·49	100	100	100
Zymotic diseases .	55	11	66	·57	·64	·58	4·2	4·6	4·3

1. *Brain and nervous system.*—Of the whole number of deaths, 139, or 9 per cent., took place through this channel; and the particular diseases are indicated in the subjoined table.

TABLE IV.—*Showing the distribution of 139 deaths due to diseases of brain and nervous system.*

Disease.	M.	F.	Total.
Apoplexy	40	9	49
Softening of brain	11	5	16
Inflammation of ditto	11	3	14
Abscess of ditto	5	0	5
Tumour of ditto	3	0	3
Diseases of ditto (not specified)	17	2	19
Paralysis	13	4	17
Epilepsy	6	2	8
Diseases of spinal cord	7	1	8
Total	113	26	139

Of the 40 men who died of *apoplexy*, 32 were invalids or of a weakly constitution, and the age (of 26 recorded) averaged 40 years, the extremes being 18 and 76. The form in which it occurred is put down as 'serous' in 21, 'sanguineous' in 9, and in 10 it is not stated.

We are not told of any lesions in the brain, or elsewhere, that gave rise to the effusion of serum in the cases of simple (serous) apoplexy, but it is worth bearing in mind that the large proportion occurred in individuals of a debilitated constitution indicating pre-existing disease. Hence the term serous apoplexy, although it indicates the immediate cause of death, does not tell us upon what pathological condition the effusion and the death depended. The term is now in great measure discarded on this account, and its occasional use may be attributed more to its convenience than its correctness.

Dr. Wilks has pointed out the frequency with which this condition is met with in individuals suffering from Bright's disease, and I think investigation would prove a relationship between the two among prisoners.

In ten out of eleven cases of 'sanguineous' apoplexy, the cerebral hæmorrhage took place in individuals whose state of health was defective. The position of the clot as given in 5 cases was as follows: lateral ventricles two, base of brain, right hemisphere, and cerebellum one each.

With regard to the other forms of brain disease which proved fatal, the reports furnish little of a definite nature. But notwithstanding this it is impossible for us to forget the great importance that must be attached to cerebral pathology among criminals. From a medico-legal point of view the brain of the criminal as the organ of mind demands full consideration.

The antagonistic opinions which medical witnesses of high standing are found to maintain in our courts of law attest to the fact that the distinction between acts entirely criminal and acts merely insane is anything but well defined or understood. Besides this the prison surgeon in his daily work is constantly called upon to form an opinion as to the mental capacity of individual prisoners, and to attach a certain value to acts done by them of a mischievous or eccentric character. I have to mention here the fact that *insane* prisoners are removed from the convict prisons and are not included in the returns given.

Hence a certain portion of the actual mortality is lost sight of. I am indebted to Dr. Orange, the superintendent of the State Asylum at Broadmoor, for a return which shows that of 173 criminals (both sexes) received there from convict prisons, since it was opened in 1863, 23 died. This number of deaths it must be remembered occurs in the worst cases, for convicts who are simply weak-minded or imbecile—as well as the epileptics—are retained in prisons. Now, during the 15 years, 432 convicts (male and female) have been sent from government prisons to lunatic asylums as insane; being on an average 28·8 per annum. Calculating the whole mortality as being at the same rate as at Broadmoor, it will be represented by 57 deaths; and this reckoned upon the whole convict population gives an average annual rate of ·5 deaths through insanity per 1000.

2. *Respiratory system.*—The lungs undoubtedly are the most vulnerable of organs, and in none more so than among prisoners. Diseases of the respiratory organs cause more than 50 per cent. of the mortality among them; and even if we exclude phthisis, the lungs show a high per centage of fatal diseases in the form of *pneumonia* and *bronchitis*; although there can be no doubt some of the deaths attributed to these were hurried on by the appearance of phthisical symptoms. Pneumonia and bronchitis contributed 65 and 68 deaths respectively; and in connection with these is best evidenced one of the great features of inflammatory diseases among prisoners; I mean the absence of acuteness. They seem to come on more insidiously than among people outside, and to be *grafted* upon some previous disease or upon a general debility. Nothing struck me more in my work among the ‘casual’ or every day sick among nearly 1600 prisoners employed on public works in the variable climate of Portland than the active and pronounced physical signs which an examination of the chest revealed in men whose pulse and general aspect were comparatively calm and free from fever; and I felt the necessity of having constant recourse to the stethoscope as a safeguard in dealing with them.

Not only is this obscurity of approach observable; but on the other hand, inflammations of the sthenic type—with flushed face, and pulse bounding and suggestive of depletion—are remarkable for

their absence ; and this too in men selected as able-bodied and fit for hard labour.

Of the deaths due to other pulmonary affections 15 are put down to pleurisy, 14 to hæmoptysis, 4 to empyema, 2 to abscess, and 1 each to gangrene and hydatid.

Phthisis.—And now we come to treat of that disease which seems to attack with unswerving relentlessness the prison population, pulmonary consumption. Well may it be termed ‘the scourge of our prisons,’ or rather, I should say, of the criminal classes, for I believe prison is more the reservoir than the source of consumption. I do not deny that imprisonment may contain in itself noxious springs in the form of depressing influences ; but it contains hygienic springs too, in the form of regularity, sobriety, and cleanliness. Nearly one half (41·29 per cent.) of the deaths among prisoners is ascribed to phthisis. But this does not represent the full extent of its ravages ; for it is to be borne in mind that in some affections, as in tubercular peritonitis, phthisis is really the prime mover ; while in other cases it appears to be the complementary agent whereby some other diseases not necessarily fatal are enabled to carry off their victim. We shall direct our attention to phthisis as the immediate cause of death, and although we shall confine ourselves as far as possible to general points, the interesting nature of inquiries into this subject will readily be seen.

During the 15 years 631 prisoners died of phthisis, 527 men, and 104 women. The annual rate per 1000 is 5·57 ; the number being 6·12 among the women and 5·47 among the men. There were nearly 3 per cent. more deaths from this cause in the female population than in the male ; the mean rate for all prisoners being 41·29 per cent. of the whole mortality.

The average age of 411 men who died of phthisis was thirty-three years five months, and of 68 women twenty-seven years nine months. From the circumstance that a prisoner when he becomes phthisical or the subject of prolonged debility or disease is sent from public works to a light labour or invalid station, it is a difficult matter to show the number of deaths from consumption that took place among the healthy men retained in this country. The following figures will help us to form some idea on this point. The healthier class of prisoners are sent to public works prisons, and we find that 95 out of the 527 deaths took place there. This indicates the number of more acute cases of phthisis that proved fatal among this class. If to this we add 65 deaths that occurred at Dartmoor and Woking, of men invalided from public works, we get a total of 157 who died of consumption, and who since imprisonment had been more or less able-bodied. I dare say the number should be increased by the addition of a few more whom I am unable to trace, they having been invalided to one prison and then passed on to another ;

but, on the other hand, it must be considered that even of those received at public works a proportion were only in 'moderate' health.

The amount of invaliding due to consumption is not within the range of this paper; but I may quote with advantage the following remarks from the report of Dr. Campbell, the medical officer of Woking Invalid Prison, for the year 1867:—"Out of 17 deaths from phthisis during the past year, 12 had been invalided for it, the ground of invaliding in the remainder having been bronchitis, infirm and aged, debility, and deformed. They were all greatly reduced at the time of reception, 12 continued under treatment in hospital till death, and the others were only capable of a little nominal work when discharged to the prison, as they sometimes were with a view in most cases to gratify their wish for a little change. These men in general acknowledge to have been long subject to cough or other chest affections, or to hereditary predisposition. In the less advanced form of the malady there was often a very satisfactory improvement, and some have become as robust and healthy as to justify me in recommending their removal to public works; no doubt some of them may have relapsed, but as every possible precaution is taken before sending them, I hope most have done well. Many others were retained here, liability to colds or exposure unfitting them for removal, but these men were often capable of performing a fair amount of work during the intervals between their attacks, and generally showed a desire for some useful employment."

The *pathological* relations of phthisis among prisoners are highly interesting and important. I mentioned a little ago how insidiously inflammatory affections of the chest among them crept upon our notice, and what unexpected physical signs frequently revealed themselves on our first examination with the stethoscope. Cases of the sort are of no infrequent occurrence on public works and among prisoners who by repeated misconduct bring dietary and other punishments upon themselves. In such, pulmonary disease has all the appearance, as I said, of being *grafted* and nourished upon some morbid condition, local or general, that has already taken root and established itself. Phthisis is very apt to spring from this combination, and every prison surgeon knows how rapidly the victim often sinks when the disease takes on this phase.

A low asthenic form of pneumonia attacks previously weakened lungs, and ushers in the night sweats, the emaciation, the fever, and increased temperature of phthisis, and when death takes place, indications of advanced and long standing disease are found at the post-mortem examination. These pathological appearances often proved a great puzzle, and, taken on the old doctrine of Laennec, which maintained the presence of tubercle in all cases of phthisis, simply unexplainable. The same appearances, on the other hand, form

according to the more recent pathology of phthisis, a rational exposition of the clinical history of the cases.

So important is this later pathology, and so essentially is consumption a disease of prisoners, that we may be at liberty to look briefly into the subject. Considerable modifications have taken place of late years in the opinion of our own authorities as to the relation between pulmonary consumption and tubercle; but German pathologists especially have turned the attention of workers in this direction; and their doctrines have found an able exponent in Professor Niemeyer of Tübingen, in whose 'Text Book of Practical Medicine,' and 'Clinical Lectures on Pulmonary Consumption' (published by the Sydenham Society), they are clearly set forth. The great principle insisted upon is that *phthisis* may exist *without tubercle*. Niemeyer holds that the majority of cases of consumption are the result of pneumonia or repeated pneumonic processes terminating in cheesy infiltration and disintegration of the lungs.

It is acknowledged that this caseous infiltration may lead on to, or be succeeded by, the development of tubercle as a secondary occurrence, and indeed Niemeyer "has no hesitation in saying that the greatest danger to consumptives is that *they are apt to become tuberculous*;" an event which mostly happens towards the fatal termination of the case. As to tubercle, he recognises but one form—the miliary; and this he says is rarely found in a lung which does not contain products of chronic inflammation. Pulmonary consumption is referable, therefore, either to caseous infiltration (the result of pneumonia—mostly of the chronic catarrhal form) or to chronic tuberculosis, wherein tubercles make their appearance. Besides there are cases of acute miliary tuberculosis which appear in the form of acute febrile disease more akin to typhus.

The doctrines, of which I have given only the outline, appear to me to throw much light upon the causation and pathology of phthisis among prisoners; and I believe a study of their application to the history of that disease in the criminal class, will go far to confirm them as accurate and truthful.

Indeed, so long ago as 1857 and 1858, Mr. L. Bradley, then medical officer of Pentonville, seemed to recognise the relationship when he returned as the cause of death in two cases "inflammation of lungs terminating in phthisis," and "phthisis following an attack of pneumonia." And I may say that in prison nothing is more easy than to trace many cases of pneumonia into phthisis; and nothing more difficult than to dissociate phthisis from pre-existing pneumonia or pulmonary affection of an inflammatory nature.

The establishment of these newer doctrines would often encourage us to form a less gloomy prognosis in consumption, and inspire us with fresh hopes in its treatment.

The improvement, even to a more or less lasting recovery, which

takes place in many of the 'phthisis' cases invalided to this establishment from other prisons, is wonderful.

I do not mean in what I have said on this subject to deny the occurrence of tubercular phthisis in a *primary* form with evident miliary deposit.

In his 'Lectures,' the following propositions are accepted as conclusions by Niemeyer :

1. The consolidations and destructions of the lung, which form the anatomical basis of pulmonary phthisis, are, as a rule, the products of pneumonic processes.

2. Pneumonia, resulting in cheesy infiltration, occurs chiefly in delicate, badly nourished persons.

With reference to these we saw, in the early part of the paper, that prisoners, physically speaking, belong to and are an *ill-conditioned* class, and we have found that nearly one half of the mortality among them is caused by phthisis. But having got so far, we have to admit that it is not so clear that the consolidations and destructions of the lung, which form the anatomical basis of the phthisis so occurring (*i. e.* very frequently, and among prisoners, an unhealthy class) are, as a rule, the products (cheesy infiltrations) of pneumonic processes. But in evidence of the correctness of this proposition, I venture, in leaving the subject for the present, to submit the following points :

1. That the anatomical basis of the phthisis, occurring among prisoners, is often a pulmonary solidification, due to cheesy infiltration, unaccompanied by tubercle.

2. That such consolidations are found in prisoners dying of phthisis, in whom the signs and symptoms on admission were referable only to inflammation of the lungs.

3. That limited consolidations of the same character, as well as pleuritic adhesions, and other pneumonic indications, are frequently found after death in prisoners who were not suspected of being phthisical, and who did not die of consumption.

4. That in prisoners who die of consumption, other organs, more especially the kidneys, are found to be the seat of degenerate cell-formation, for the most part non-tubercular in character.

5. That many prisoners, invalided for phthisis, require admission to hospital, from time to time, for slight catarrhal attacks, indicating a tendency to the occurrence of inflammatory processes in the lungs.

6. That the comparative frequency of apparent recovery and arrestment of the disease, among prisoners invalided for phthisis, betokens a more recoverable state of the pulmonary organs than we are justified in expecting where tuberculosis has established itself.

3. *Circulatory system.* Diseases coming under this head proved fatal in 130 cases ; of which 107 were in males and 23 in females.

Heart disease caused 104 deaths; aneurism, 15; pericarditis, 8; rupture of large vessels, 3.

Heart disease occupies a considerable place among the maladies of prisoners, and if we remember the irregularities and the alternations of excitement and depression to which their previous mode of life submits them we shall be the less surprised at this. Of the 104 deaths from this cause, 88 were in men and 16 in women. This gives us an average annual mortality of .91 from heart disease per 1000 of prison population; the corresponding number among males and females being .91 and .94 respectively. If we divide the fifteen years into three quinquennial periods we find the average mortality for each period to be as follows :

	1st per.	2nd per.	3rd per.
Males . . .	.64	.93	1.15
Females . . .	.57	.48	1.81

This table shows a steady increase in the numbers among males up to nearly double; while among the females it shows a remarkably sudden rise in the third period to more than three times the rate of the first period.

This increase among the males tallies with the statement made by Dr. Quain, in his *Lumleian Lectures*¹ this year, which showed that in adult males the proportion of deaths from heart disease is greatly on the increase. On the other hand, however, he informs us, that "the same statistics show there is almost no rise in the per-centage of deaths of females from cardiac disease during the twenty-five years, from 20 to 45." The only explanation of these different results that I am at present able to offer is that, granted a corresponding liability to heart disease, or to an increase in the number of cases of heart disease in both sexes, it will follow that women, from their weaker constitutions, are less able to resist the influence of the disease; and it will be at once acknowledged, I think, that women of the criminal class are more on a footing with men of the criminal class, as regards liability to disease, than are women in the general population with men in the same. A reference to Table III will show that, with one exception, the per-centage of deaths due to the various orders of disease was in every case higher among the women than among the men. The exception is with regard to 'other diseases' (*i. e.* all, excluding phthisis) of the respiratory system, wherein the males show a considerably higher proportion, owing, no doubt, to the greater atmospheric vicissitudes to which they are exposed out of doors and on public works. Hence it is reasonable to conclude, as far as the testimony of the death-rate goes, that female prisoners are as a body more unhealthy and delicate than male prisoners. No reliable information is to be gleaned

¹ 'Lancet,' March 23rd, 1872.

from the reports as to the form of cardiac disease which conducted to death. It would seem that valvular disease and hypertrophy are usually present and in association with each other; while in a considerable number the heart is returned as "fatty." My own impression is, that atheroma and the calcareous transmutation in the first portion of the aorta most frequently present themselves, and lead on to hypertrophy and dilatation. The heaviest heart I have met with weighed 34 ounces, and there the beginning of the aorta was completely encircled by calcareous deposits.

Aneurism.—Of the 15 deaths from this cause, 10 were in males and 5 in females, certainly a high relative proportion in the latter. In 3 of the cases the situation is not given; in all the others the aneurism was aortic: thoracic in 8, abdominal in 2, combined thoracic and abdominal in 1, and not stated in 1. The 'unfortunate' circumstances of the class from which our female prisoners especially come readily suggest syphilis as the probable cause of aneurism occurring among prisoners, and may explain the relatively high proportion among the women. On this subject Dr. Rendle, of the (then) female prison, in his Report for 1864, thus remarks:—"This disease (aneurism) occurs not unfrequently among female prisoners, and is, I believe, induced by a change in the coats of the large blood-vessels, which is of a syphilitic origin."

Pericarditis is recorded as the cause of death in 7 males and 1 female.

4. *Digestive System.*—In the eye of the prisoner no system deserves more (and, he will say, receives less) attention than this. Its working capabilities, he feels, are in excess of the encouragement afforded to it in the way of food-supply; but so, also, says the *honest* poor man. However, as a pathological subject in prisoners, its interest is secondary.

Reckoned upon the whole mortality in both sexes, 8·7 per cent. of the deaths are due to diseases of the digestive organs, the total number being 133 (males 108, females 25). Of these deaths, 52 were due to peritonitis and enteritis, 35 to dysentery and diarrhoea (one or two being of a choleraic nature), 27 to diseases of the liver, 10 to hernia, and 9 were of an anomalous nature. Undoubtedly a proportion of the cases where the peritoneum was involved had a tubercular origin, but the list includes one death each from rupture of the stomach, colon, and gall bladder.

Dysentery and diarrhoea will be referred to under 'zymotic diseases.'

Hepatic disease is not prominently fatal among prisoners, but even in cases where death is caused otherwise, post-mortem examination frequently reveals extensive alterations in the appearance and structure of the liver. The 'nutmeg' liver, due either to amyloid or fatty degeneration, is the condition most frequently met with;

and, where the organ is altered in size, enlargement seems to be the almost invariable condition. The advanced state of cirrhosis with contraction and atrophy is rare, when we consider the numbers of wretched chronic drunkards that come under treatment in prison. The circumstances of prison life, involving a regular, though restricted, diet, and abstinence from spirituous liquors, tend to correct rather than to create diseased states of the liver, and we cannot, therefore, attribute to imprisonment the frequent occurrence of pathological changes in its structure. That frequency seems to depend, first, upon the great prevalence of consumption among prisoners, and, secondly, upon habits of dram drinking indulged in prior to conviction. As far as actual deaths are concerned, liver disease shows favorably in females as compared with males, the numbers being 2 among the former, and 25 among the latter. The relative mortality is striking, and I am inclined to refer the difference to the presence among the men of some old soldiers, whose residence abroad has helped to develop the disease in a more active form.

The 10 deaths from *hernia* were, with one exception, among the men, and are referable, most likely, to their labour. We are not told whether they were operated on or not.

5. *Urinary system*.—Diseases of the urinary organs caused 55 deaths (10 of them being in females). This gives a per-centage of 3.6 upon the whole mortality, a rate which I am sure fails to represent the influence which renal diseases exert among the causes of death.

From a pathological point of view, *degeneration of the kidneys* must be looked upon as of the first importance. Whether it presents itself (secondarily) as a morbid condition more frequently than the liver I am not prepared to say, but the aggregate mischief caused by it certainly seems to be greater.

As the *origo mali* in many dropsical effusions, and even in some cases of heart affection, renal disease must not be overlooked, while secondarily it is a common associate of phthisis and other constitutional diseases of a low type. The enlarged fatty kidney, and the somewhat smaller tough kidney of amyloid degeneration, are met with; the former more frequently, I think, than the latter. Cysts are of no infrequent occurrence.

The *bladder* sometimes leads on to death by chronic inflammation or through malignant disease.

6. *Constitutional and general diseases*.—The variety of diseases that come under this heading makes it useless for us to attempt any general comparative statement with regard to them. The nature of this 'various' group will readily be understood by reference to the following table, which sets forth the numbers in both sexes, as well as the total mortality due to the individual causes.

TABLE V.—*Showing mortality from constitutional and general diseases.*

Disease.	Males.	Females.	Total.
Strumous diseases, including lumbar and psoas abscess .	45	8	53
Cancer	19	10	29
Dropsy	13	5	18
Fevers	17	2	19
Erysipelas	10	—	10
Diseased bones and joints .	16	1	17
Debility	12	2	14
Age and decay	7	—	7
Diabetes	5	1	6
Anæmia and syncope	5	—	5
Pyæmia	4	—	4
Syphilis	1	1	2
Rheumatism	2	—	2
Uterine disease	—	2	2
Ulcer	2	—	2
Purpura	1	—	1
Tumour	1	—	1
Atrophy	1	—	1
Total	161	32	193

Struma or *scrofula* can scarcely be called a *fatal*, although a very common, disease among prisoners. Its great frequency among them is rather to be recognised as a constitutional state or cachexia, inherited or acquired, which renders them at once more liable to the accession of diseases, and less able to resist their influence.

Its presence is indicated by a general unhealthiness of aspect, with or without glandular swellings, skin eruptions, or other external manifestations.

Struma goes hand-in-hand with phthisis, and through this channel it acquires its largest connection with the death rate. But when it chooses to act more directly, it presents itself in the form of large abscesses, which often work sad havoc before they extinguish life. Apart from the deaths from diseases of bones and joints (17 in number), the majority of which might be included in the same category, diseases of the strumous class were fatal in 53 cases (45 in males and 8 in females). Of these, 39 deaths were from abscess, the great majority of which come under the designation ‘psoas’ or ‘lumbar.’

Cancer was fatal in 29 cases: 19 males and 10 females. The seat in order of frequency is given in the following list:

Stomach	9
Liver	5
Uterus	4
Lungs	3
Intestines	2
Breast	1
Urinary Bladder	1
Bones of Spine	1
Not stated	3
	<hr/>
	29

The particular form is seldom given. *Diabetes* caused 6 deaths, one of them being in a female.

Veteran criminals to the number of 7 became extinct through *age and decay*, but a number of the old men are carried off by pulmonary and other attacks.

Zymotic diseases.—We now come to consider a class of diseases, the zymotic, which are of peculiar interest to us. We shall first dispose of the enthetic, dietetic, and parasitic orders, by stating that only two deaths (syphilis) were due to the first, one (purpura) to the second, and none to the third.

The *miasmatic* order (to which we shall refer in our use of the term zymotic disease) claims 66 deaths for the whole 15 years; males, 55; females, 11.

The total number of deaths represents an average annual mortality from zymotic diseases of 4.4 in a mean population of 7551 prisoners, or of .58 per 1000.

Zymotic diseases cause 4.3 per cent. of the deaths from all causes.

Table VI shows the fatal diseases belonging to this class.

TABLE VI.—*Mortality from zymotic diseases.*

DISEASE.		MORTALITY FOR FIFTEEN YEARS.			MORTALITY, QUINQUENNIAL PERIODS.		
		M.	F.	Total.	I.	II.	III.
Fever.	Diarrhœa and dysentery	26	9	35	8	19	8
	Typhus	5	1	6	...	4	2
	Typhoid	5	1	6	3	2	1
	Unnamed	5	...	5	...	3	2
	Smallpox	1	...	1	...	..	1
	Erysipelas	10	...	10	4	3	3
	Rheumatism	3	...	3	3	—	—
Totals		55	11	66	18	31	17

Diarrhœa and dysentery.—The latter disease does not often present itself in prison in its true form. Diarrhœa, resulting for the most part from atmospheric influences, but sometimes from dietary changes also, not unfrequently makes its appearance as a passing epidemic. The rarity of death shows that it is not usually severe, but the early application of prisoners when attacked, and the means adopted to check when possible, any general cause of the disease, no doubt exert a favorable influence. Diarrhœa and dysentery together are the main cause of death in the zymotic class, being fatal in 35 out of the whole 66 cases.

The few deaths from infectious and contagious diseases also speak very favorably. It is not to be expected that prisons should be *absolutely* free of such; but while a *few* deaths indicate their presence, they show also that some influence is at work, or some means adopted whereby they are prevented from spreading. Fevers, smallpox, and erysipelas, caused only 28 deaths in the fifteen years in the whole population, and only one death in each of the three years last reported upon.

These results are the more interesting when we remember the large amount of disease, as well as the general low tone of health, which characterise the inhabitants of our prisons. The separation of convicts from the general public (except through the officers), and the means at disposal for complete isolation when individuals are seized with contagious disorders, as well as the habits of cleanliness and regularity enforced throughout the prisons, must exert a powerful and favorable influence in preventing the approach and the spread of zymotic diseases. The importance which diseases of this class have in relation to the question of public health has induced me to make some pointed allusion to them. Exactly a century ago the English prisons could only be looked upon as a very hotbed of pestilence and squalor. The tide had risen high, but its height had been reached, and the sanitary act of 1774 was, thanks to the indefatigable labours of Howard, the signal for its ebb. The hundred years have not been without their work; but that work has proved a triumph, and I believe sanitary science can point to no more signal success than the facts that for the past 15 years, ending with 1870, the convict prisons of England have been entirely free from fatal epidemics, and that the mortality in them from zymotic diseases has been reduced to a minimum.

They now take rank, as Dr. Guy has said, "among the healthiest abodes of men."

7. *Accidents and Violence.*

The violent deaths were altogether 74 in number, being at the rate of 5 per annum for the 15 years.

They are thus distributed :

Accident	.	.	.	.	49
Suicide	.	.	.	.	24
Homicide	.	.	.	.	1
					<hr/>
					74

Only one violent death occurred among the females, and that was a suicide.¹

Accidents.—The accidental deaths took place, as might be expected, for the most part while the prisoners were engaged at the heavier sorts of work. The prisons at which fatal accidents have occurred, and the number at each, are given under :

Public Works	Portland	.	.	.	23	} 39
	Chatham	.	.	.	9	
	Portsmouth	.	.	.	7	
	Millbank	.	.	.	4	
	Pentonville	.	.	.	3	
	Dartmoor	.	.	.	2	
	Woking	.	.	.	2	<hr/>
					50	

Of course the large proportion occurred at public work prisons, and it would not be surprising if fatal accidents were more frequent, when we think how many of the prisoners have been unused to hard labour, or else are lazy and careless. Portland itself contributes nearly the half, but this is most likely due to the greater variety and uncertainty of the work there, in quarrying and excavating.

In some of the cases death took place after primary amputation of limbs ; and in more than one case death resulted from injuries self-inflicted (as by putting the foot under waggon wheels) with a view to evade labour.

One man at Pentonville while at work in the kitchen stole a piece of meat. In swallowing it, it stuck in his throat and he was suffocated, he himself in trying to extract it having forced it into the larynx.

Another, at Millbank, trying experiments with belladonna ointment, poisoned himself unintentionally. Having received the ointment for the relief of his pain, he appears to have kept it and afterwards to have swallowed some with the view of producing illness.

At the same prison one prisoner killed his fellow by a blow.

The following case—a warning to “smashers”—may be given here. I copy it from the report of Mr. Bradley, late Medical Officer for Pentonville, for 1868 : “Convict J. P. was suddenly seized with

¹ 73 violent deaths among the men, give 7 per 1000 per annum ; and if we deduct this from 13·3, we get 12·6 as the average annual mortality due to disease among the males.

vomiting of blood, and died of hæmorrhage a few hours afterwards. The post-mortem examination discovered a counterfeit half-crown lodged in a pouch in the gullet, which had caused ulceration and perforation of the aorta. The prisoner had been a 'smasher' and in order to escape detection swallowed the coin referred to about ten or eleven months before his death. The case is remarkable for the absence of any difficulty in swallowing food or other symptom indicative of the presence of a foreign body in the gullet."

Suicide.—In the fifteen years, 24 convicts committed self-destruction, being at the annual rate of .21 per 1000 of the whole prison population. Only one female destroyed herself.

The mode adopted was as follows :

Hanging (1 female)	.	.	.	16
Cut-throat	.	.	.	4
Precipitation from a height	.	.	.	2
Not stated	.	.	.	2
				—
				24

The prisons at which they occurred :

Pentonville	.	.	.	11
Millbank (1 female)	.	.	.	10
Portland	.	.	.	2
Chatham	.	.	.	1
				—
				24

Curiously enough the two cases at Portland occurred within a fortnight of each other.

When we consider the forlornness of prison life, the rate of suicide cannot be reckoned a high one. The three chief features of suicide among prisoners are, first, that it is usually committed during the earlier months of imprisonment (*i. e.* when the feelings of remorse and disappointment may be supposed to be keenest); secondly, that in the majority of cases no mental derangement had manifested itself prior to the act; and, thirdly, that it is of rare occurrence among female prisoners.

V. *Has the mortality of the Government prisons of England increased or decreased?*

This question may be taken either in a *general* sense, applying it to the whole circumstances of the case, or in a *special* sense, wherein reference is made only to the mortality *as due to imprisonment*. With regard to the special or limited question, I think we may with tolerable safety, especially after what has been said about zymotic diseases, reply that the mortality has decreased. But we shall see that the large question as to the increase or decrease is not so easily answered. If we are content with bare numbers, a reference to the

tables will tell us that the death rate has both increased and decreased within a given period; and this suggests a difficulty as to what constitutes an increase or decrease. Now if we are prepared to general conclusions, as regards mortality say, simply because we find a rise or fall of 1 per 1000 upon a population of 7000, we must be prepared at the same time to show that the circumstances affecting that mortality have been uniform, or, if not uniform, equally balanced *pro* and *con*.

The circumstances of our convicts as bearing upon the question of mortality have not been uniform; and passing over for the present the fluctuating annual rate of death, our investigation must begin by inquiring what modifications have taken place, and how far and in what direction they have manifested their influence.

Those influential modifications are referable to one or other of the following topics relating to prisoners.

1. The physical condition on reception.
2. The dietary.
3. Pardons on medical grounds.
4. Transportation.

It will be more convenient as a matter of arrangement to begin with the two last, and for reference I have constructed the following table.

TABLE VII.—*Showing numerical distribution in quinquennial periods of deaths from all causes; deaths from phthisis; and of medical pardons and transportations.*

	1ST PERIOD, 1856—1860.		2ND PERIOD, 1861—1865.		3RD PERIOD, 1866—1870.	
	Total number.	Average annual number per 1000 of pop.	Total number.	Average annual number per 1000 of pop.	Total number.	Average annual number per 1000 of pop.
Deaths from all causes .	483	12·8	494	13·6	551	14·0
„ „ phthisis .	210	5·5	211	5·8	210	5·3
Medical pardons .	82 ¹	2·1	28	·7	12	·3
Transportations ² .	3849	102	3706	101	1658	44

Medical pardons.—The value of pardons on medical grounds, as an item in the bill of mortality depends, of course, on the probabilities which the individuals would have had of dying during their imprisonment. Now, in 1857, the Secretary of State drew attention to the abuse of medical pardons which then existed, and said that those so pardoned frequently returned to prison with fresh sen-

¹ Deducting 14 cases pardoned as being of weak mind.

² Including those sent to Gibraltar.

tences. For instance, of 96 pardons in the first quinquenniad, 14 were granted because the prisoners were 'weak-minded,' and these cases may fairly be deducted as not being of fatal import. Of the remaining number, the majority were consumptives, some of whom got out that they might have a better chance of recovery than in prison. Sometimes the release was effected in order that an operation might be performed. In several others it was granted only a few months before the due time. In 9, 'general debility' formed the grounds for pardon. During the third quinquenniad greater stringency was exercised, and only 12 medical pardons were granted. With an equal fatality in the cases, it is clear that the reduction of medical pardons goes towards increasing the mortality among prisoners; *i. e.*, the number of medical pardons bears an inverse ratio to the mortality. But the fatal import of the cases is not equal, and it is impossible, in the absence of positive information, to adjust precisely the comparative value of recent and former medical pardons. I am willing to proceed upon the following terms, *viz.* considering the great laxity during the first period, to accept one-third (the proportion given by Mr. Bruce Thomson and other authorities) of the medical pardons in that period as deaths; and, bearing in mind the stringency of more recent years, to reckon the 12 medical pardons in the third period as deaths. On the whole, in this relation, I think there is more (or, at least, as much) risk that we grant too many as deaths in the third period than that we accept too few as such in the first.

Transportation.—The alterations on this score are involved in its cessation during the later years of the convict system, and the extent of the change may be thus stated: that whereas 102 men per 1000 prisoners were sent abroad annually, in the first period only 44 were sent in the third. Now transportations and medical pardons of convicts exert antagonistic influences on the mortality. The great reduction in the number of both during later years implies, in the case of transportations, the detention in English prisons of so many convicts of the healthiest class, *i. e.*, of those *least* likely to die; and in the case of medical pardons, the detention of so many convicts of the most diseased class, *i. e.*, of those *most* likely to die. We must see, therefore, what relation the one case bears to the other. Beginning with the first period, if we take one third of the medical pardons as deaths we find that the relation of such pardons per 1000 of population to the transportations per 1000, to be as 1 to 14.5; and in the third period, if we accept the 12 medical pardons as deaths, the relationship is found to be exactly the same.¹

So that whatever small differences may be suggested, on one side

¹ This result is so curious that I must state that I had fixed upon the terms as to medical pardons *before* I made the comparative calculation.

or the other, it may reasonably be accepted that in the matter of death-rate the opposing influences of medical pardons and trans-portations are balanced.

Dietary.—In the year 1864 the introduction of a reduced scale of diet for convicts was effected. We do not here intend going into this subject further than its relation to the mortality is concerned. Now I may safely assert that no subject has received more anxious attention from the authorities than that of the diet. While nothing is more to be deprecated, from a socio-criminal point of view, than any over-feeding of prisoners as such, nothing could be more unjust than an enforced starvation of them. A prison diet, speaking generally, ought to be the minimum diet which is compatible with a due performance of the healthy bodily functions, as well as of the work implied in penal servitude.

Diet does not affect mortality except through disease, and hence a full consideration of the question of the amount and the effects of particular diets ought to be undertaken in connection with the *diseases* of prisoners. But we may point out that the indirect effects upon prison mortality of insufficient diet would show themselves by causing an increased vulnerability as to disease; and any reduction of diet towards a minimum necessarily tends to the reduction of the disease-resisting powers of the mass, and herein lie the risks. But with regard to convicts, those risks are in a measure compensated for by the adaptation of employment to physical condition, and by the readiness with which they may be admitted to hospital, where a suitable diet, alterable at discretion, is authorised. On the whole, notwithstanding counteracting *provisos*, a reduction of diet cannot but exert a comparatively unfavorable influence on the mortality, in so far as it is the first in the field, and it is not until its effects show themselves that the remedies are applied. It may seem a more comfortable way of putting it if we say that an increase of diet would tend to reduce the amount of disease, and, it may be, of death, among our convicts; but the same argument is not so comforting when we think of the element of encouragement it would afford to garrotters, burglars, and other disturbers of our domestic peace.

Lastly, we have to revert to the *physical condition on reception*. We found in the beginning of this paper that prisoners were essentially an ill-conditioned class, and now I have to state that the unhealthiness of convict recruits has been on the increase. In his Report for 1867, Mr. Gover, of Millbank Reception Prison, alludes to the "fact that the proportion of convicts who are in a diseased or infirm state on their reception is on the increase." And he gives a table which shows that the average daily number of infirmary sick in that prison increased steadily from 1859 up to 1867, when it had become exactly double. The directors themselves refer, in their

Report, published in 1868, to the "great increase in recent years in the proportion of convicts of a weakly and diseased constitution." Accepting this as of course unfavorable to the decrease of convict mortality, I now proceed to my argument.

The changes involved in the four topics with which we have been dealing have come into operation during the more recent years of the convict system; consequently, the more recent years, taken with relation to our subject, fairly constitute a *period* in that system, and therefore the mortality of the five years last reported upon form a legitimate basis for comparison with previous periods of five years. Now, the whole fifteen years embraced in our inquiry have, except in respect of these four topics, been remarkably uniform as to influences bearing on the death rate. There has been no fatal epidemic to complicate, nor has there been any special cause of unusual mortality; so that, regarding the middle period of five years in the light of a transition period, we go on to compare the third period ending with 1870 with the first period ending with 1860.

And first as to figures, Table VII shows that the average annual number of deaths per 1000 of population from all causes rose from 12·8 in the first period to 13·6 in the second, and to 14·0 in the third. We thus arrive at an increase of 1·2 in the annual mortality per 1000 in the third as compared with the first period. And what have we found to be the direction of the influences exerted by the four sets of modifications which characterise, be it remembered, the third period? The only influence out of the four which favoured the decrease of the mortality was the cessation of transportation, and that influence we found to be exactly neutralised by the reduction of medical pardons. We are thus left with a reduced dietary and an increased ratio of ill health among convict recruits, both of which exert an unfavorable influence on the death rate; and it may be said, I think fairly too, that the *amount* of that unfavorable influence is represented by the increase of 1·2 in the average annual mortality per 1000 in the third period as compared with the first. But, not to put too fine a point upon it, I think that, having shown that there has been a progressive increase in the quinquennial rate of mortality, and also that the weight of characteristic influences favours that increase, I may claim to have proved at least that, upon the general question, the tendency of the mortality of the English convict prisons has been towards an increase. This leads us on to inquire to what forms of disease that increase is due.

Not to the 'scourge of prisons,' consumption, for, notwithstanding the annual fluctuations of its death rate, exactly the same number died from that disease in the third as in the first period; but the larger population in the former reduced its rate slightly. See Table VII.

Besides consumption, only the 'various' list of constitutional and

general diseases shows a comparative decrease (indicating, probably, defective classification of causes during the first period). All the other, classified, causes of death show an increase. The amount of increase or decrease per 1000 in the third period, as compared with the first, is given below.

DISEASES.	INCREASE.	DISEASES.	DECREASE.
Brain and nervous system	·5 per 1000	Phthisis	·2 per 1000
Respiratory system (excluding phthisis)	·3 „	Constitutional and general	·9 „
Circulatory	·7 „		
Digestive	·1 „		
Urinary	·3 „		
Violence	·4 „		
Total increase . . . 2·3 „		Total decrease . . . 1·1 „	

If we deduct the decrease from the increase we get 1·2, the general increase in the third period upon the first.

On this subject I may refer to some statistics published by Dr. Rendle, of Brixton Prison, in the 'British Medical Journal' for April, 1871 (No. 536). I took exception to conclusions based upon insufficient and immaterial data, and a brief correspondence ensued between us (see 'Journal,' Nos. 538, 543, and 546). Throughout his reports Dr. Rendle frequently deals with the question of mortality among female prisoners. About ten years ago, Mr. Bruce Thomson, of Perth, published in the 'Edinburgh Medical Journal' some statistics on the mortality, &c., among the prisoners in the General Prison for Scotland.

I append a table, which gives a numerical comparison as to the average population and mortality of the convict prisons of England, Ireland, and Scotland, for the corresponding fifteen years, viz. 1856-70.

TABLE VIII.

	1ST QUINQUENNIAL PERIOD, 1856-1860.			2ND QUINQUENNIAL PERIOD, 1861-1865.			3RD QUINQUENNIAL PERIOD, 1866-1870.			FOR WHOLE 15 YEARS 1856-1870.		
	Annual population.	Total deaths.	Annual deaths per 1000.	Annual population.	Total deaths.	Annual deaths per 1000.	Annual population.	Total deaths.	Annual deaths per 1000.	Annual population.	Total deaths.	Annual deaths per 1000.
England	7523	483	12·8	7270	494	13·6	7858	551	14·0	7551	1528	13·5
Ireland	2114	162	15·3	1619	109	13·4	1359	70	10·2	1697	341	13·0
Scotland ¹	608	61	20·0	684	38	11·0	735	55	14·9	675	154	15·3
(general prison)												

¹ Includes prisoners not sentenced to transportation or penal servitude

VI. *Concluding remarks.*—The convict question, more especially its practical portion, is in great measure a medical one. ‘Penal servitude’ may be said to be a large experiment set on foot by the State with the view of proving under certain conditions how much work a man is able to do, and how little food he can do it upon. Penal serfs or convicts, with this object among others, are for a time separated from the outer world and the test is applied. The adjustment of food and work to physical capability, or rather perhaps the adaptation of individual capacities to certain standards of food and work, is one of the chief duties of the medical department. The same department deals with the sanitary and hygienic questions relating to prisons and their occupants, as well as with the bodily and mental diseases of the latter. The results obtained from investigation, in these different directions ought not, in these days of state medicine and sanitary laws, to be lost, the more especially as they are favorable indications of what can be done under proper management and discipline. It is to be regretted, on various grounds, that no general annual report is made as to the condition of the convict medical department. The individual medical reports from prisons varying greatly in their character, afford no indication of the state of health, &c., of the whole convict body. In spite of this drawback, I have endeavoured in this inquiry to present a fair estimate of the rate of death and its causes in our convict prisons, *as far as the evidence of the fifteen years last reported upon goes*; but I have avoided, for the sake of simplicity, statistical comparisons with other bodies of individuals.

The following are the general conclusions at which I have arrived:

I. That the average population was 7551, the ratio of females to males being as 3 to 17.

II. That the total deaths were 1528, the ratio of females to males being as 3 to 16.

III. That the annual rate of death averaged 13·5 per 1000 prisoners.

IV. That more than one half (52·6 per cent.) of the mortality is due to diseases of the respiratory organs, and that pulmonary consumption is by far the most fatal disease among prisoners, 5 out of every 12 deaths (41·3 per cent.) arising immediately from it.

V. That diseases of the brain and nervous system follow next in point of frequency, and then diseases of the heart.

VI. That 5 per cent. of the deaths are due to accident and suicide.

VII. That there has been no fatal epidemic in the convict prisons for the last fifteen years, and that their mortality from zymotic

diseases has been reduced to a minimum ($\cdot 5$ per 1000 prisoners per annum).

VIII. That, while the mortality *as due to imprisonment* may be said to have diminished, upon the examination of the whole question the tendency has been towards an increase in the rate of death, which increase appears mainly attributable to a higher ratio of disease existing among the convicts on reception.
